far-reaching in its effects than it claims to be in its original purpose. It widens our sphere of surgical helpfulness, develops the powers of observation and self-reliance of each nurse upon whom the privilege of work in this department falls. It sends many children each year out of the disastrous heat of the city to seashore and country, where their health is renewed and fresh strength received to help them fight the disease with which they are burdened, and incidentally shows the wretched mothers the value of care and cleanliness. To these people, who largely are aliens, for much of our work lies among the Italians, and Jews from Russia, cleanliness, fresh air, and that far-reaching law of brotherly love come in the form of innovations to be at first accepted with suspicion and incredulity, but our experience is that gratitude and trust will take their place as time goes on, for the mother-love that is in them prompts them that the hospital and its workers are their children's friends, and so theirs.

Not only the nurses, but the children themselves, do their share in propagating the gospel of health. They have become accustomed during their stay in the hospital to the luxury of a clean body and wholesome food, and in the candor of childhood tell their parents of it and wish for similar things at home. So the seeds of comfort are planted, which will bear fruit, if not abundantly now, in the coming generation.

SOME CLINICAL FEATURES OF TRACHOMA

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TRACHOMA is an affection primarily of the palpebral conjunctiva, contagious in nature, and in this country, at least, generally chronic in course, which as it progresses leads to extensive changes in the lids and in the tissues of the eyeball, and which, unless checked by treatment, causes in time great diminution in vision, though rarely absolute blindness. The changes present in the conjunctiva consist at first in the deposit therein of spherical bodies, the trachoma granules, and the production of hypertrophy of the mucous membrane. The trachoma granules vary somewhat in size in the same case. The larger granules are about as large as a pin's head and translucent. As a rule, they are first observed in the lower fold of transition—that is to say, on the inner surface of the lower lid at the point where the conjunctiva leaves the lid to pass upon the surface of the globe. At the same time smaller granules will be present deeper in the tissues of the conjunctiva, and, in consequence, the conjunctiva will be hypertrophied and thrown into folds. Upon everting the upper lid, on the surface of the tarsal cartilage, the trachoma granules appear in the early stages as deeply seated, small, yellowish bodies. In this situation, as the conjunctiva is closely adherent to the cartilage, folding of the mucous membrane does not so readily take place, and it is therefore here that the granules are most clearly to be observed. Throughout the rest of the conjunctival surface of the upper lid hypertrophy readily takes place, and on eversion is earliest recognized at the outer and inner margins of the cartilage. Gradually the membrane becomes extensively infiltrated with the trachoma granules and markedly hypertrophied. Some of the granules are large and soft, others are small and hard. Both kinds of granules are invariably found together, but in any individual case one or the other may greatly predominate and so give a sort of type to the disease.

This stage, as a rule, takes several years for its completion, and during its progress symptoms of irritation are frequently absent, at least for the greater part of the time. There are usually transitory attacks of congestion of the eyeball and lachrymation, and some muco-purulent discharge from time to time, but for long periods there may be no symptoms to suggest the necessity for a careful examination. In the earliest stages of this period diagnosis is difficult, differentiation from the disease known as follicular conjunctivitis being by no means easy. The granules (follicles) of follicular conjunctivitis are smaller than those of trachoma and are arranged in parallel rows on the mucous surface of the lower lid. They are not accompanied by hypertrophy of the mucous membrane, nor are they to be found deep-seated in the conjunctiva covering the superior tarsal cartilage. If, on everting the lower lid, we find only small follicles in parallel rows unaccompanied by hypertrophy, with no changes in the conjunctiva of the upper lid, we cannot, therefore, say that the case is one of trachoma; but if we are doubtful as to the character of these follicles, and think that the mucous membrane presents commencing hypertrophy, we then evert the upper lid, when if we find follicles on the surface of the tarsal cartilage our diagnosis of trachoma will be confirmed. So in doubtful cases we should not neglect to evert the upper lid and examine it carefully.

As the disease progresses some of the follicles rupture, others gradually disappear by conversion into connective-tissue. The membrane gradually shrinks, becomes atrophic, and is gradually replaced in part by cicatrices. The cicatrices contract and distortion of the cartilages results. The palpebral fissure becomes narrowed, the margins of the lids inverted (entropion), and the eye-lashes are brought in contact with the globe, causing great irritation. The cornea becomes hazy in its upper part and permeated with blood-vessels (pannus), while ulceration of its surface occurs from time to time, causing pain, photophobia, and lachrymation. There are two theories adduced to explain pannus. The first, and older, ascribes its occurrence to irritation and infection of the cornea by the rough, hard, and thickened upper lid. The second, more modern, and at present more generally held, maintains that pannus is trachoma of the cornea, its character being modified by the structure of the tissue it involves. For my own part, I must confess that the clinical evidence in support of the former theory, and particularly that furnished by the pannus which occasionally follows operations for trachoma, seems to me to be very strong. In the latter class of cases the lids are invariably greatly roughened. Unless the course of the disease be checked, the pannus increases and the cornea gradually becomes permeated by connective-tissue, loses still further its transparency, becomes weakened, and bulges forward under the pressure of the intra-ocular fluids. In late stages of the disease the iris may become involved, a rather sluggish form of iritis being present. Occasionally, though very rarely, a trachomatous ulcer will perforate the cornea.

The progress of the disease as usually seen in this country is chronic, requiring years to reach the stage of cicatricial contraction of the lids. Consequently the follicular stage is found most frequently in childhood and adolescence, the cicatricial in adult life.

The disease is transmitted by contagion, by direct contact of the discharge of a trachomatous eye with that of a healthy eye. The particular germ to which the disease is due, if there be one, has not as yet been isolated. During the last twelve months two physicians and three nurses of the trachoma service at Gouverneur Hospital have contracted the disease in spite of all possible precautions. From this we may draw the deduction that the disease is contagious to a decided degree. On the other hand, Pisinger was not always successful in producing trachoma by inoculation. The disease is not communicable through the air, and is most highly contagious during periods of acute exacerbation, during which times secretion is abundant. The disease belongs essentially to the tenement population, and is uncommon among those whose circumstances permit of more comfortable environment. It is therefore a disease of clinical rather than of private practice. It is apt to be especially prevalent in institutions for children, in which as large a proportion as twenty-five per cent. of the inmates may be found affected. Simple overcrowding and dirty surroundings are not directly responsible, however, for the disease, but where children are crowded together the chances of infection are greatly increased, and uncleanly habits naturally aid in this direction. I have not been able to assure myself that an anæmic or run-down condition is to be regarded as a predisposing cause. A racial predisposition does, however, undoubtedly exist. The disease is most prevalent among the Jews and Irish. The negro, on the other hand, appears to enjoy comparative immunity, which is not, however, as complete as some writers state.

Considering the obstinate and relapsing character of this disease, and the fact that one year and a half ago ten per cent. of the school-children of New York were found to be afflicted with it, it would seem that something might be done in the way of prophylaxis by excluding from our shores such immigrants as suffer from trachoma. As it is in their homes that children are most likely to become infected, the distribution of circulars explaining the nature of the disease to our tenement-house population would, I think, be productive of considerable good, at least in time. In addition, in consideration of the many sources of infection in institutions for children, it is greatly to be desired that one such institution should be set apart for the reception of trachomatous patients. The actual treatment of the disease consists in local measures, non-operative and operative. Of the former the oldest, and to my mind the best, consists in the application to the everted lids of the solid stick of sulphate of copper every day or less frequently, according to the severity of the case. Although tedious and somewhat painful, this treatment is not infrequently exceedingly satisfactory, and is particularly apt to be so in cases presenting a relatively large number of soft granulations and in cases in which the granules have begun to disappear and hypertrophy of the membrane still remains. Daily frictions with a pledget of cotton saturated with bichloride of mercury 1 in 2000 to 1 in 500 is popular with many surgeons. It has seemed to me that the effect produced has been due more to the friction than to the chemical employed. Solutions of formalin employed in the same manner have seemed to me to have no specific effect. At the Hospital for Contagious Eye Diseases, established by the Department of Health, an opportunity to compare these methods in fifteen thousand cases demonstrated to the minds of the physicians in attendance the undoubted superiority of the sulphate of copper. The operative treatment of the follicular stage of trachoma consists in the expression, or squeezing out, of the granules, either with or without previous scarification of the membrane. This operation necessitates a general anæsthetic, ether by preference. Nitrous oxide gas is unsatisfactory for this purpose on account of the congestion it produces, the hemorrhage being so profuse that the field of operation is much obscured. Ethyl chloride, in my opinion, is not safe. The operation cannot be thoroughly performed under cocaine, even when this drug is used in the form of an impalpable powder applied to the everted lids. Chloroform should be reserved for cases of albuminuria.

The operation is performed as follows: The lids are everted with a pair of Noyes's trachoma forceps, while with another pair or with Knapp's or Prince's forceps the granules are squeezed out, either with or without previous scarification. At the Contagious Eye Disease Hospital the operators prefer to use first Jameson's trachomatomes, which express at the same time that they scarify. The operation is then completed with Noyes's forceps, while Prince's forceps are finally used to remove the granules situated in the canthi. The mucous membrane is then thoroughly rubbed with a solution of bichloride of mercury 1 in 500, sterilized white vaselin is applied to the surface, or a few drops of castor-oil are instilled into the eye, a sterilized gauze dressing is applied, and the eyes are bandaged. The bandage is removed as soon as the patient recovers from the influence of the anæsthetic. The longer the bandage is retained, the more extensive will be the adhesions. The adhesions are caused by the agglutination of folds of conjunctiva denuded of their epithelium by the operation. They should be separated with a probe daily, until their tendency to formation ceases. Reaction is to be combated with ice compresses, irrigations of boracic acid, and, if secretion be profuse, some one of the silver salts should be used, preferably argyrol in twenty per cent. solution.

Old cases of trachoma with cicatricial changes in the lids and pannus are best treated by linear scarifications, the pannus being combated by atropine and hot applications. This treatment sometimes gives very good results. If the palpebral aperture be much contracted, a free cantholysis is indicated and is of the greatest service. With the jequirity treatment of old non-vascular pannus I have had no experience, but when in these cases the cornea becomes ectatic (bulges), the operation of iridectomy often gives a good result, even when the intra-ocular tension does not seem to be increased.

DESCRIPTION OF THE HEATING, LIGHTING, AND VENTILATION OF THE LYING-IN HOSPITAL, NEW YORK*

By LOUISE BURDETTE
Superintendent of Nurses

In modern hospital construction there are probably no greater problems to be solved than those of satisfactory light, heat, and ventilation, all of which are so essential to the welfare of patients who are brought together in a hospital ward.

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* Read at the meeting of Superintendents of Training-Schools in Pittsburg, October, 1903.